

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A job scheduling management method for managing schedules of jobs allocated to a plurality of computers connected through a network, comprising the steps of:

monitoring a performance state of a resource of a computer, included in said computers, to which said jobs have been allocated,

wherein said performance state includes first information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in said computer, an amount of memory being used in said computer, an amount of empty space on a disk storage device included in said computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by said computer;

determining if said performance state meets a predetermined condition;

if said performance state meets said predetermined condition, detecting a job, of said jobs allocated to said computer, that is uncompleted at a timing when said predetermined condition is met;

detecting another computer that is available to execute said detected uncompleted job based on second information concerning resources required for executing said detected uncompleted job; and,

wherein said second information includes an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said

computers, the cost being defined as a value representing efficiency for use of said resources; and

allocating said detected uncompleted job to said detected other computer.

2. (previously presented) A job scheduling management method as claimed in claim 1, wherein the determination as to if said predetermined condition is met is based on how many times said usage rate of said CPU exceeds a predetermined usage rate.

3. (currently amended) A job scheduling management method in a management computer for allocating jobs to a plurality of computers connected through a network and managing a schedule of each of said jobs, comprising the steps of:

managing first information indicating correspondence between a job and a computer to which said job is allocated, second information indicating one or more resources required for executing said job, and third information indicating one or more resources to be used by each of said computers;

monitoring a performance state of a resource of said computer to which said job is allocated,

wherein said performance state includes information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in said computer, an amount of memory being used in said computer, an amount of empty space on a disk storage device included in said computer, an average

processing time for the disk storage device, and an average query processing time for a database application being executed by said computer;

determining if said performance state meets a predetermined condition;

detecting an uncompleted job among said jobs allocated to said computers using said first information;

extracting one or more resources required for executing said detected uncompleted job using said second information[;],

wherein said second information includes an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources;

extracting another computer among said plurality of computers that is available to use said extracted resources using said third information; and

allocating said detected uncompleted job to said extracted other computer.

4. (currently amended) A job scheduling management method as claimed in claim 3, wherein when allocating said detected uncompleted job to said extracted other computer, said job and other jobs having been already allocated to the said extracted other computer are rescheduled.

5. (currently amended) A job scheduling management method as claimed in claim 3, further comprising the steps of:

when allocating said detected uncompleted job to said extracted other computer, detecting an uncompleted job of said jobs having been already allocated to said extracted another computer using said first information;

extracting one or more resources required for executing said detected uncompleted job using said second information;

extracting a further computer that is available to use said extracted resources for said ~~another~~ extracted other computer using said third information; and

allocating said detected uncompleted job to said extracted further computer.

6. (original) A job scheduling management method as claimed in claim 3, wherein said management computer allocates one or more jobs to itself.

7. (currently amended) A job scheduling management method as claimed in claim 3, wherein said management computer further manages information indicating correspondence between said job and a time when said job is to be finished and information indicating a time passed in executing said job, and

wherein if said management computer predicts that said job is not finished in the time when said job is to be finished from the performance state of said computer that executes said job and said time required for executing said job, then determining that said predetermined condition is not met, and

allocating the uncompleted job of said jobs allocated to said computer to another computer.

8. (original) A job scheduling management method as claimed in claim 3, wherein when allocating said detected uncompleted job to said extracted other computer, said detected uncompleted job is allocated to a plurality of other computers among said plurality of computers according to one or more resources required for executing said job.

9. (currently amended) A job scheduling management computer for allocating jobs to a plurality of computers connected through a network and managing schedules of said jobs, comprising:

management means for managing first information indicating correspondence between a job and a computer to which said job is allocated, second information indicating one or more resources required for executing said job, and third information indicating one or more resources to be used by each of said computers~~that a first job is allocated to a first one of said computers and a second job is allocated to a second one of said computers;~~

monitoring means for monitoring a performance state of a resource of said first-computer to which said job is allocated,

wherein said performance state includes information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in said first computer, an amount of memory being used in said first-computer, an amount of empty space on a disk storage device included in said first-computer, an average processing time for the disk storage device, and an average query

processing time for a database application being executed by said first computer; and

~~rescheduling means for re-allocating said first job allocated to said first computer into said second computer and said second job allocated to said second computer to a third computer of said computers with respect to information managed by said management means in accordance with an instruction given from said monitoring means~~means for determining if said performance state meets a predetermined condition;

detecting an uncompleted job among said jobs allocated to said computers using said first information, and extracting one or more resources required for executing said detected uncompleted job using said second information.

wherein said second information includes an inter-resource distance which is a cost value taken when an execution computer of said computers uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources;

means for extracting another computer among said plurality of computers that is available to use said extracted resources using said third information, and allocating said detected uncompleted job to said extracted other computer.

10. (currently amended) A computer-readable recording-storage medium storing a job scheduling management program for upon being executed by a plurality of computer tangibly performing-performs functions

using a plurality of computers, including allocating jobs to said computers which are connected to each other through a network and are used by a management computer for managing schedules of said jobs, said job scheduling management program comprising:

a function of managing first information for indicating correspondence between a job and a computer to which said job is allocated, second information indicating one or more resources required for executing said job, and third information for indicating one or more resources to be used by each of said computers;

a function of monitoring a performance state of a resource of said computer to which said job is allocated,

wherein said performance state includes information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in said computer, an amount of memory being used in said computer, an amount of empty space on a disk storage device included in said computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by said computer;

a function of determining if said performance state meets a predetermined condition;

a function of detecting an uncompleted job of said jobs allocated to said computers ~~according to said determined result~~ using said first information;

a function of extracting one or more resources required for executing said detected uncompleted job using said second information.[:]

wherein said second information includes an inter-resource distance which is a cost value taken when an execution computer of said computers

uses an available resource included in a plurality of resources usable by said computers, the cost being defined as a value representing efficiency for use of said resources;

a function of extracting another computer among said plurality of computers that enables to use said extracted resources using said third information; and

a function of allocating said detected uncompleted job to said extracted other computer.